DOCUMENT RESUME

ED 051 989 SE 007 162

AUTHOR Williams, H. R.
TITLE Keys to the Common Genera of Marine Plants Taken Aboard the Orange County Floating Marine Laboratory.
INSTITUTION Golden West Coll., Huntington Beach, Calif.
NOTE 13p.

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS Biology, *Botany, College Science, *Instructional Materials, *Oceanology, Reference Materials, *Secondary School Science, *Taxonomy
IDENTIFIERS ESEA Title III

ABSTRACT

Provided is a dichotomous key to the common genera of marine algae and angiosperms which are taken aboard the Orange County Floating Marine Laboratory. It is designed primarily for use by junior and senior high school students. Drawings of representative members of the various genera are included. This work was prepared under an ESEA Title III Contract. (RS)

ED051989

KEYS TO THE COMMON GENERA OF MARINE PLANTS TAKEN ABOARD THE ORANGE COUNTY FLOATING MARINE LABORATORY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

PREPARED BY

H. R. WILLIAMS
BIOLOGY DEPARTMENT
GOLDEN WEST COLLEGE

WORK HEREIN SUPPORTED BY
ESEA TITLE III - PROJECT NO. 67-3799

SE 007 162

ED051989

KEYS TO THE COMMON GENERA OF MARINE PLANTS TAKEN ABOARD THE ORANGE COUNTY FLOATING MARINE LABORATORY

Prepared by: H. R. Williams, Golden West College, Biology Department

The original drawings found on pages 9-14 are by the author and may not be reproduced without his permission.

(Numbers in parentheses refer to the illustrations)

KEY TO THE GROUPS

1a. Plants grass-green or dark green to almost black green--Green algae and flowering plants----------This page

1b. Plants pink, red, purplish, or brown, but not green----------2

2a. Plants brown, quickly turning green in 70% rubbing alcohol (isopropanol)--brown algae----------This page

2b. Plants pink, reddish, red, purple, purplish or almost black, retaining their color for several minutes in 70% rubbing alcohol--red algae----------3

KEY TO THE GENERA OF GREEN ALGAE AND FLOWERING PLANTS

1a. Plants spongy, growing upright and branching dichotomously (1)----------*CODIUM*, Deadman's Fingers

1b. Plants not spongy. Resembling grass (2) *PHYLLOSPADIX*, Surf Grass.

KEY TO THE GENERA OF BROWN ALGAE

1a. Hollow floats present----------2

1b. Hollow floats absent----------6

2a. A single, large float (3) *PELAGOPHYCUS*, Elk Kelp.

2b. More than one float----------3

3a. Floats in a series (4 & 5)----------4

3b. Floats occur individually (6 & 7)----------5

4a. The floats expanding the blade margins (4) *CYSTOSEIRA*, Sea Fern.

4b. The floats not expanding the blade margins (5) *HALIDRYS*, Southern Sea Fern.

5a. Stipe (stem) cylindrical in cross section and blades borne alternately along the stipe (6) *MACROCYSTIS*, California Giant Kelp.

5b. Stipe flat and blades borne in two rows along the margins (7) *EGREGIA*, Feather Boa.

6a. The whole plant a bubble, and sac-like (8 & 9)---------7

6b. Plant not a bubble and not sac-like--------------------8

7a. Plants more or less perforated (8) *HYDROCLATHRUS*.

7b. Plants smooth and not perforated (9) *COLPOMENIA*, Sea Potato.

8a. Plant with a single, large blade which may be toothed, lobed, or lacerated, few if any branches---------- 9

8b. Plant variously branched and divided----------------14

9a. Blades with veins or midribs-----------------------------10

9b. Blades without veins or midribs--------------------------11

10a. Blades rough and corrigated, developing perforations, the stipe fringed----------*AGARUM*

10b. Blades and stipes smooth, blade undulated or lobed and without perforations (10)--Juvenile *EGREGIA*, Feather Boa.

11a. Plants 1-3 meters long, blades leathery----------*LAMINARIA*

11b. Plants under 60 cm long, blades smooth, thin----------12

12a. Blades with lobes along the margin (11)--Juvenile *EISENIA*, Southern Sea Palm.

12b. Blades without lobes along the margin----------13

13a. Blades expanding gradually and developing a longitudinal median slit above the stipe (12)--Juvenile *MACROCYSTIS*, California Giant Kelp.

13b. Blades expanding abruptly above the stipe, not developing a slit (13)--Juvenile *LAMINARIA*.

14a. Plants tree-like, stipe heavy----------15

14b. Plants not tree-like, mainly flat blades----------16

15a. Plants forked and bearing two groups of drooping strape-like blades--*EISENIA*, Southern Sea Palm.

15b. Stipe bearing branches near the top and ending in a blade----
----------*PTERYGOPHORA*

16a. Plants with midribs or veins (14)----------*DICTYOPTERIS*

16b. Plants without midribs or veins, dichotomously branched and about equal in breadth in upper and lower parts---17

17a. Plants usually dark brown, branches usually over 5mm wide; margins over 3 cells thick (15)----------*PACHYDICTYON*

17b. Plants usually light brown, branches usually under 5 mm wide; margins only 3 cells thick (16)----------*DICTYOTA*

KEY TO THE GENERA OF RED ALGAE

1a. Plants jointed and stony (calcareous)--The Corallinaceae----2

1b. Plants not jointed and stony----------4

2a. Conceptacles restricted to terminal segments, branching dominantly pinnate----------*CORALLINA*

2b. Conceptacles not restricted to terminal segments, branching various----------3

3a. Segments cylindrical or only slightly flattened, twice to many times as long as wide----------*AMPHIROA*

3b. Segments markedly flattened, conceptacles on both face and margins----------*CALLIARTHRON*

4a. Major portion of plant not more than 4 times as broad as thick----------5

4b. Major plant parts clearly flat, being more than 4 times as broad as thick----------12

5a. Major plant parts round in cross-section (cylindrical)------6

5b. Major plant parts somewhat flattened----------24

6a. Branches exceeding the stipe in diameter---*BOTRYOCLADIA*

6b. The cylindrical stipe <u>not</u> bearing enlarged branches----7

7a. Diameter of major cylindrical stipe well over 1 mm----------8

7b. Diameter of major cylindrical stipe 1 mm or less----------10

8a. Branching dichotomous----------*SCINAIA*

8b. Branching not dichotomous----------9

9a. Plants with twining and hooked branches-*LAURENCIA SUBOPPOSITA*

9b. Plants without twining and hooked branches--------*AGARDHIELLA*

10a. All branches similar----------11

10b. Stipe bearing tufts of minute, hairlike lateral branches----------*POGONOPHORELLA*

11a. Branches consisting of one row of large cells-----*GRIFFITHSIA*

11b. Branches consisting of many rows of cells, coarse, wirelike, to 20 cm or more in length----------*GELIDIUM*

12a. Plants parasol-shaped----------13

12b. Plants <u>not</u> parasol-shaped----------14

13a. Blade margins smooth----------*DROUETIA*

13b. Blade with starlike points----------*SCIADOPHYCUS*

14a. Plants entangled and bearing hooked branches--*ACROSORIUM*

14b. Plants <u>not</u> bearing hooked branches----------15

15a. Blades with lines or veins----------16

15b. Blades <u>not</u> with lines or veins----------17

16a. Blades with smooth margins----------female *STENOGRAMME*

16b. Blades with toothed margins----------*NIENBURGIA*

17a. Blades with irregular teeth along the margins-----*LEPTOCLADIA*

17b. Blades with smooth margins or with lobes, ruffles or other irregularities, but not teeth----------18

18a. Plants under 3 cm in length, usually growing attached to other plants----------19

18b. Plants larger than 3 cm, usually attached to rocks----21

19a. Plants with midrib and lateral veins visible under a weak hand lens----------*BRANCHIOGLOSSUM UNDULATUM*

19b. Plants without midrib----------20

20a. Plants round-lobed, unbranched, one cell thick----------*MYRIOGRAMME*

20b. Plants branched, segments strap-shaped, many cells thick----------*FAUCHEA*

21a. Plants unbranched or very little branched----------22

21b. Plants clearly and frequently branched----------23

22a. Flat surface of broad blades with rough or pointed outgrowths----------*GRATELOUPIA HOWEII*

22b. Flat surface of broad blades essentially smooth----------*CRYPTONEMIA*

23a. Outermost branches becoming congested----------*CARPOPELTIS*

23b. Outermost branches not becoming congested----------*PHYLLOPHORA*

24a. Dichotomous branches with short, pinnate lateral branches----------*PRIONITIS CORNEA*

24b. Branching mainly pinnate or irregular----------25

25a. Plants composed of compressed or flattened parts without marginal teeth----------26

25b. Plants of flat blades with irregular marginal teeth----------*LEPTOCLADIA*

26a. Upper branches very dense, feathery, with many branchlets curved like sickles----------*PLOCAMIUM*

26b. Upper branches not feathery and curved----------27

27a. Small branchlets with knee-bends; mature parts with branches about the same width throughout their length----------*GELIDIUM CARTILAGINEUM*

27b. Small branchlets without knee-bends; mature parts with branches reduced in diameter and becoming entangled----------*PTEROCLADIA*

ILLUSTRATIONS

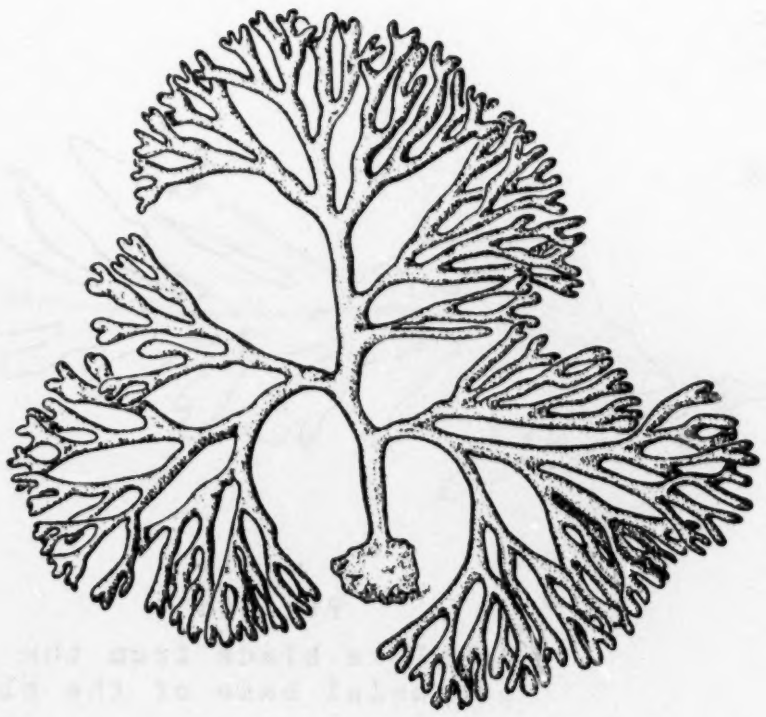

Fig. 1
CODIUM - Deadman's Fingers

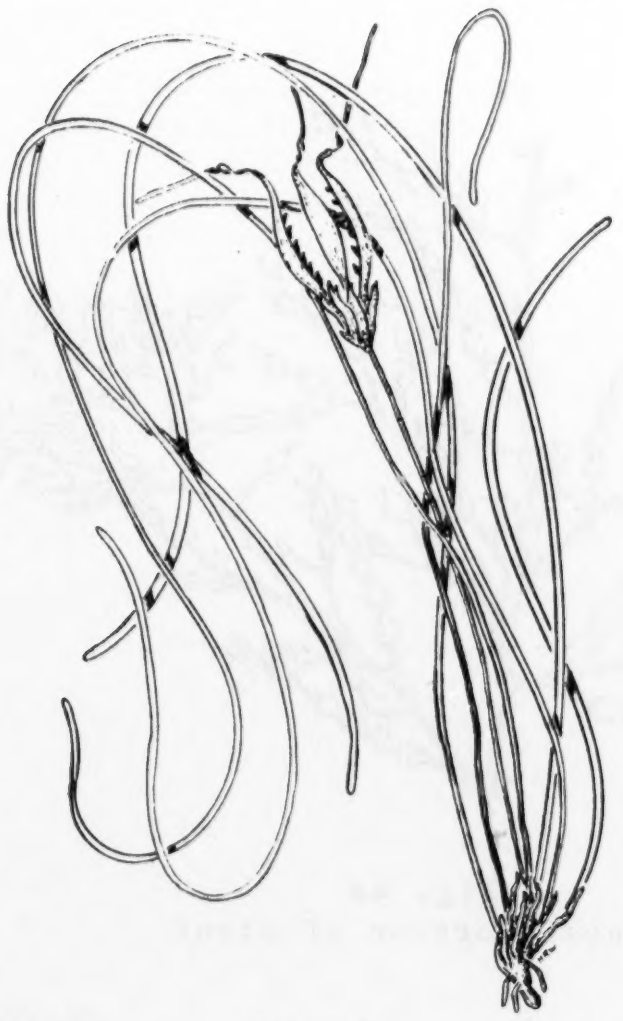

Fig. 2
PHYLLOSPADIX - Surf Grass

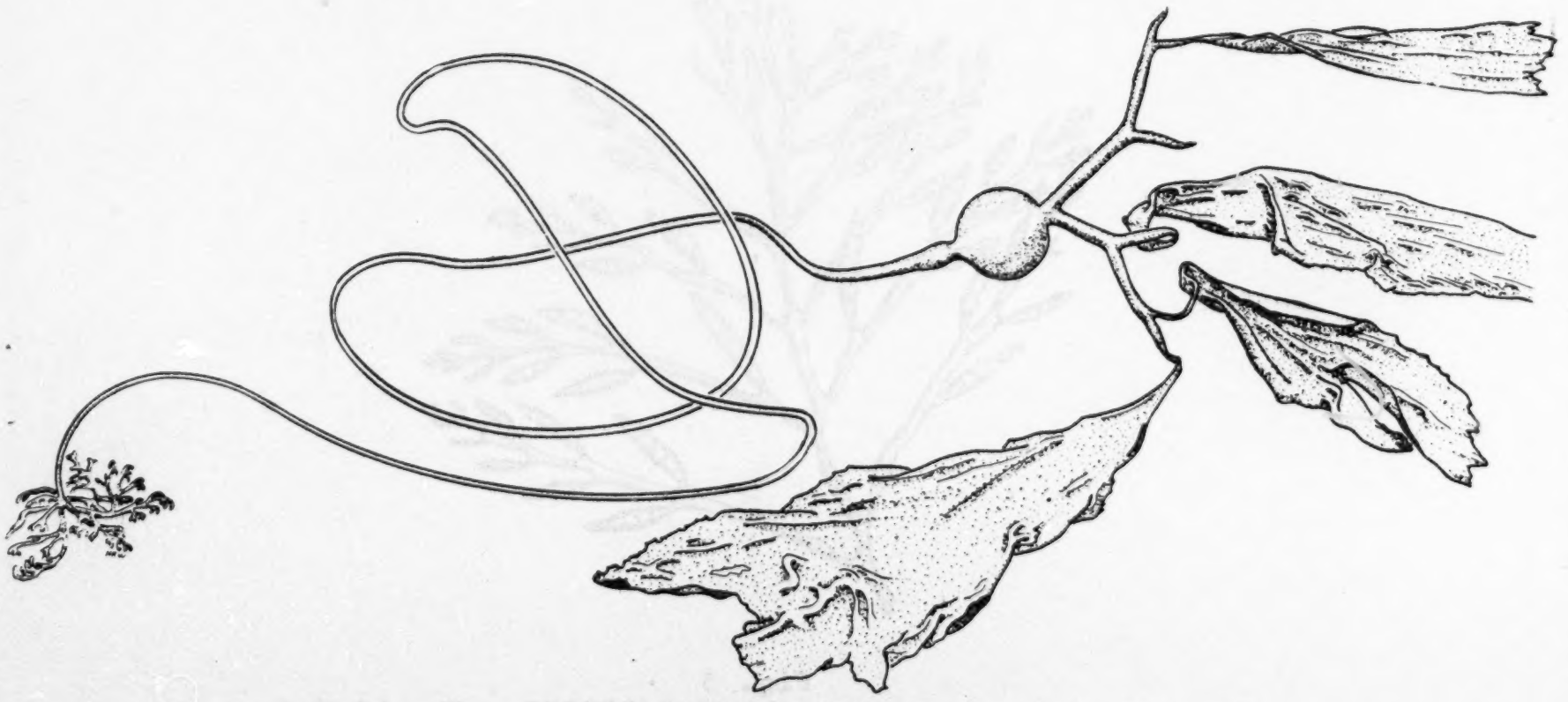

Fig. 3
PELAGOPHYCUS - Elk Kelp

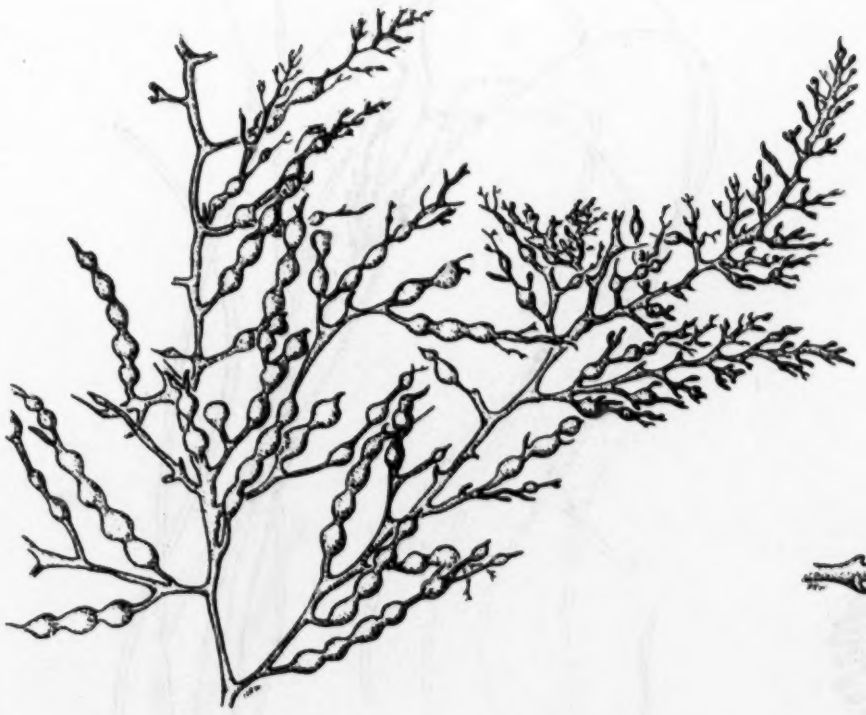

Fig. 4a
Annual portion of plant

Fig. 4b
Oak-like blade from the perennial base of the plant

CYSTOSEIRA - Sea Fern

Fig. 5
Part of the annual portion of *HALIDRYS*. The blades of the perennial base are indistinguishable from those of *CYSTOSEIRA* (Figure 4b).

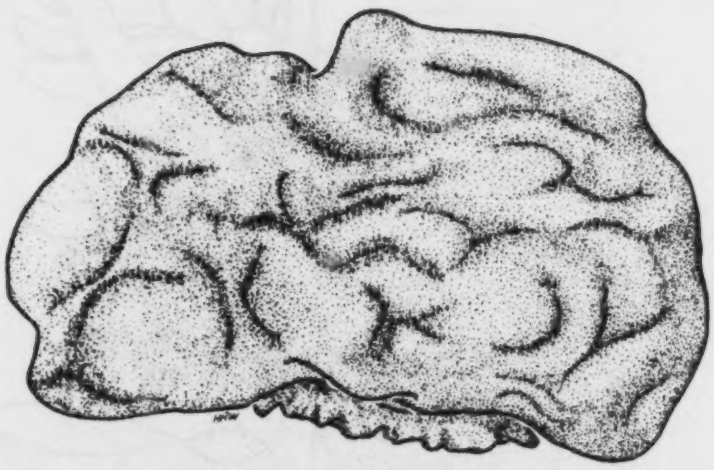

Fig. 9
COLPOMENIA - Sea Potato

Fig. 10
Juvenile *EGREGIA* - Feather Boa

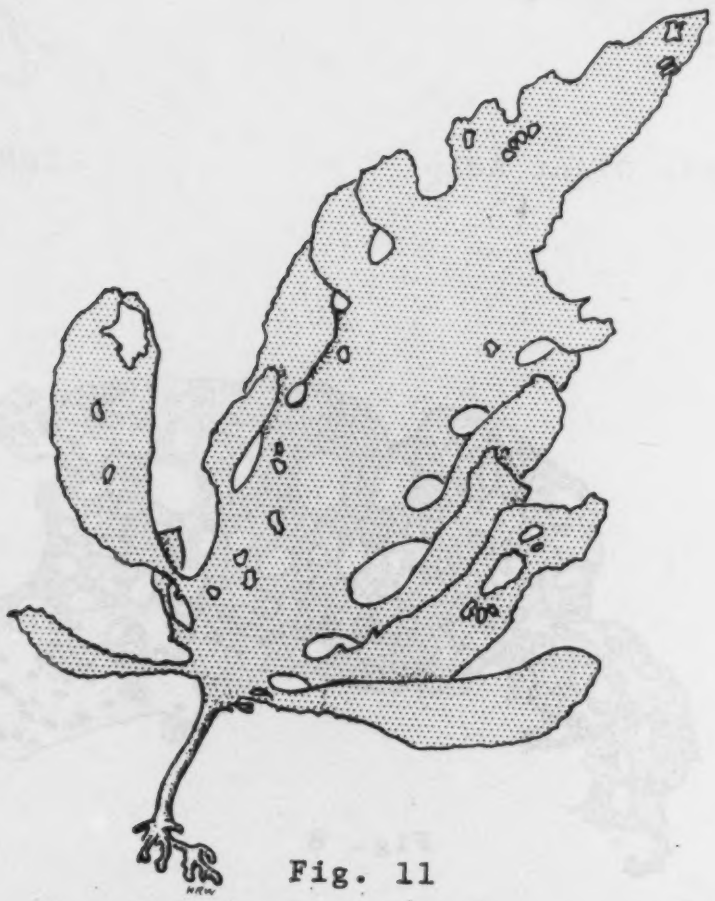

Fig. 11
Juvenile *EISENIA* - Southern Sea Palm

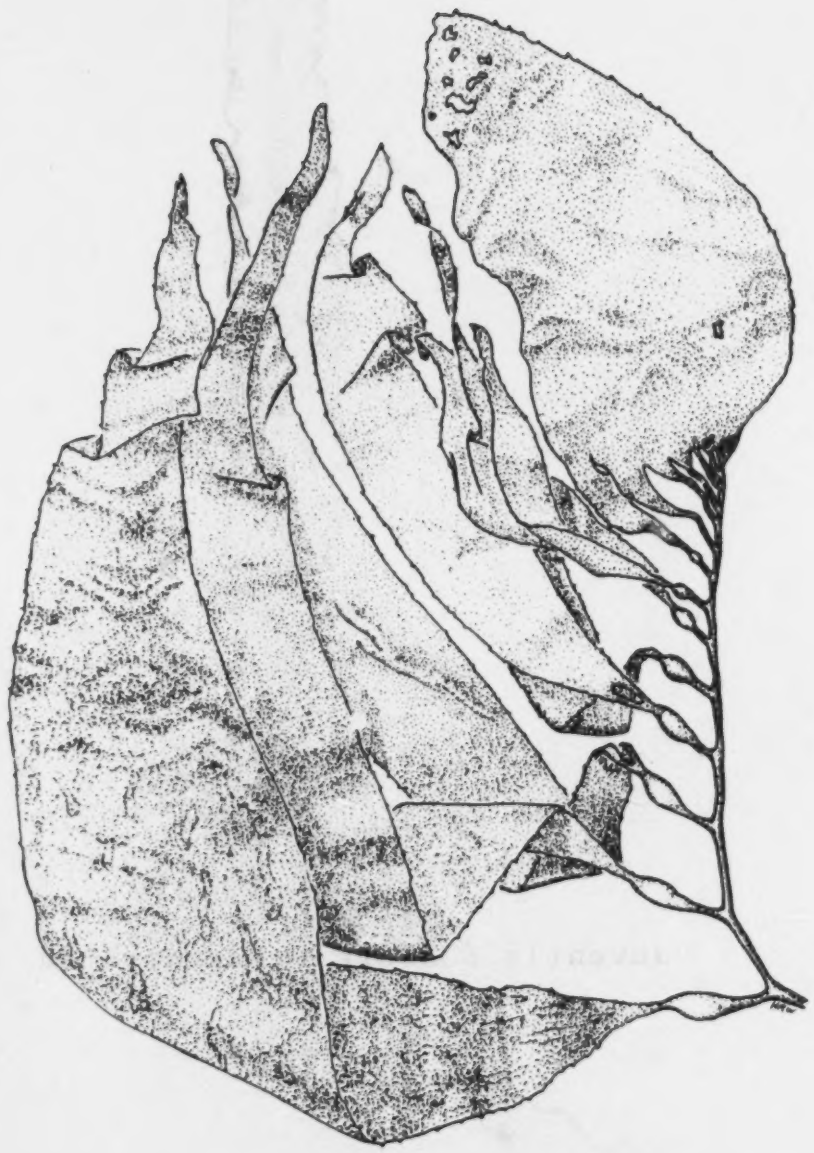

Fig. 6
MACROCYSTIS - California Giant Kelp

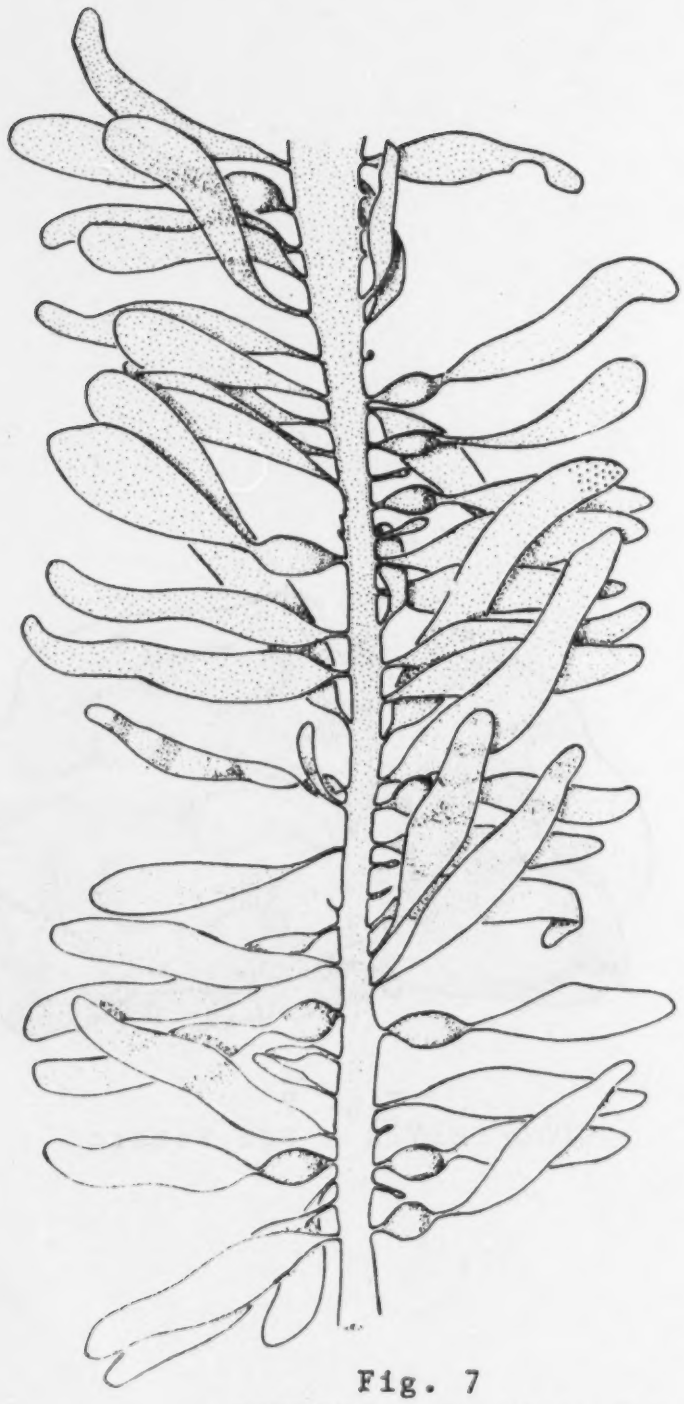

Fig. 7
EGREGIA - Feather Boa

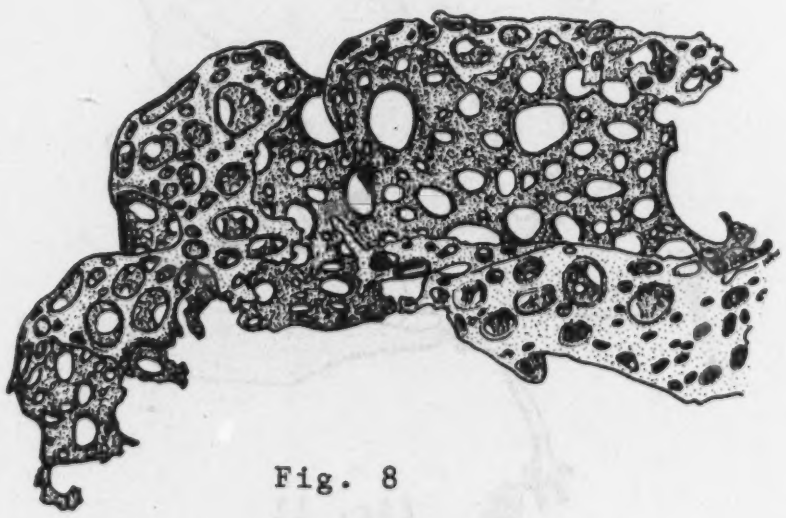

Fig. 8

HYDROCLATHRUS

Fig. 12
Juvenile *MACROCYSTIS*
(California Giant Kelp)

Fig. 13
Juvenile *LAMINARIA*

Fig. 14 - *DICTYOPTERIS*

Fig. 15
PACHYDICTYON

Fig. 16
DICTYOTA

1068182
469146